

KVM Expertise

Leading the way in digital KVM



Tower
Baggage Handling
Air Traffic Control Centres





Leading the way in digital KVM

Guntermann & Drunck is regarded as one of the leading manufacturers of digital and analogue KVM products for control rooms in air traffic control centers, broadcast, automation, marine and other sectors such as telecommunications and finances.

With a broad portfolio of powerful products to extend, switch and distribute keyboard, video and mouse signals and many years of experience when it comes to installing systems in towers, air traffic control rooms, baggage handling or general control centers at airports, G&D provides users from all applications with maximum customer benefits and real added value.

G&D is considered a top performer regarding:

- Failure safety, redundancies and preventive monitoring
- Reliable 24/7 operation for air traffic controllers
- Highest quality requirements regarding long operating times and life of products for air traffic control applications
- Broad range of helpful functions that provide even more flexibility and usability

G&D offers the largest KVM product portfolio at the market. All G&D products as well as their variants are compatible with each other and can be combined even in largest applications.



G&D KVM solutions optimise your IT equipment and increase productivity for man and machine – both can therefore work under best possible conditions.

If you need the best possible KVM equipment for your specific application and a completely worry-free solution, then ask for G&D – from professionals to professionals.



Intelligent solutions



KVM Extenders

- DL-Vision
- FIBREVision
- DVIVision



KVM Switches

- DL-MUX
- DVIMUX
- DisplayPortMUX



KVM Matrixswitches

- ControlCenter-Digital
- DVICenter
- CATCenter



Monitoring & SNMP

- Preventive Monitoring
- SNMP trap & agent
- DevCon-Center



Functionality

- CrossDisplay-Switching
- Channel grouping
- Stacking function
- Screen-Freeze function

KVM products for Air Traffic Control

KVM in the control tower ► Improving the controllers' concentration



The mission-critical applications of the control tower require air traffic controllers' absolute and constant concentration. That's why it is so important to provide the very best possible working conditions with no diversions or disturbances. In the limited space of the tower, the noise and heat generated by the powerful processors of the computer system creates an unwanted disturbance. However, thanks to KVM products such as KVM extenders and KVM matrix switches, the computers can be moved out of the tower to another location a good distance away.

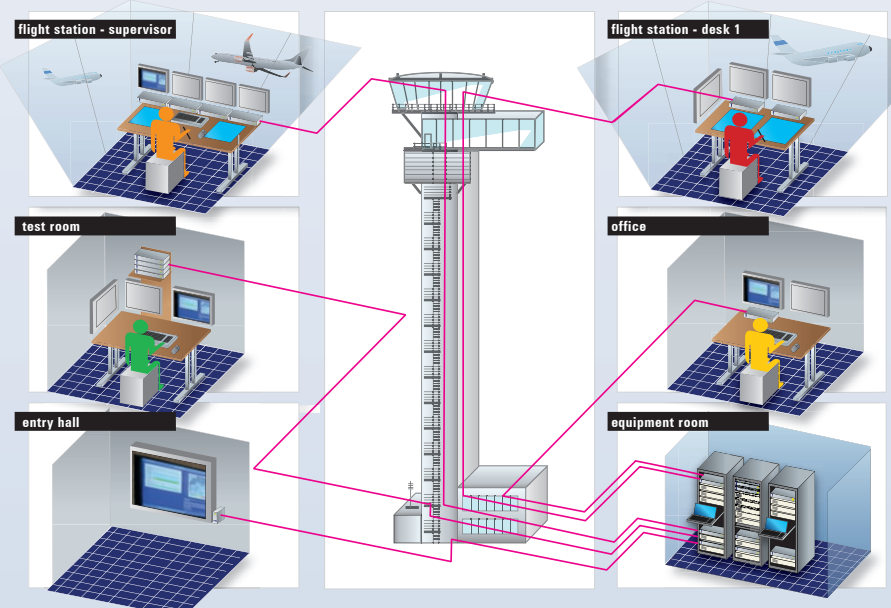
This solution not only saves space in the tower but reduces the costs of air conditioning and climate control. In a dedicated server room, computer maintenance is made easier too, with no unwanted distractions from maintenance personnel. KVM extenders transmit computer signals in real-time over long distances with no loss in quality. Controllers can set about their tasks without even realizing they are operating their computers remotely. With KVM matrix switches, the operation of multiple computers can be decentralized via multiple consoles.



How KVM works in the tower

KVM products are an essential part in towers. Once the computers had been removed to a central equipment room, they were connected to a KVM matrix switch, e.g. ControlCenter-Digital 288. The extender feature of said matrix switches established connections to offices, the test room and finally up to the flight station with all working positions. All workstations can access any computers that are connected through KVM technology.

Even in the crisis room, users can access and view all computers. The computer signals are even further extended to the safety-sensitive flight station. In a separate testing room, employees inspect any IT equipment thoroughly. And even from here, technicians with specially assigned user rights can access and maintain the computers.



KVM in Air Traffic Control Centres ► Preventive monitoring, Redundancy and Fallback



Coordinating departures and arrivals and controlling overflying traffic requires the maximum reliability of all IT components. Air Traffic Control Centres are sensitive security areas that can enjoy major benefits through deploying a KVM extender such as DL-Vision. This allows computers to be removed from the control centre, improving working conditions and enabling preventative monitoring and event reporting.

Regulatory safety demands can be met by integrating the DevCon-Center. This provides centralized proactive monitoring and configuration of network-capable G&D devices. Depending on results or predefined thresholds, the DevCon-Center triggers and sends a message to the system administrator, allowing them to react before any failures occur.

Redundant and fallback systems are essential for the controller's work. To prevent a total breakdown, three independent systems (primary, redundant, and fallback) are applied to the controller's desk. Each system consists of a computer and a KVM extender line. By pressing a button at a KVM switch installed next to the desk, switching between systems is made easy.



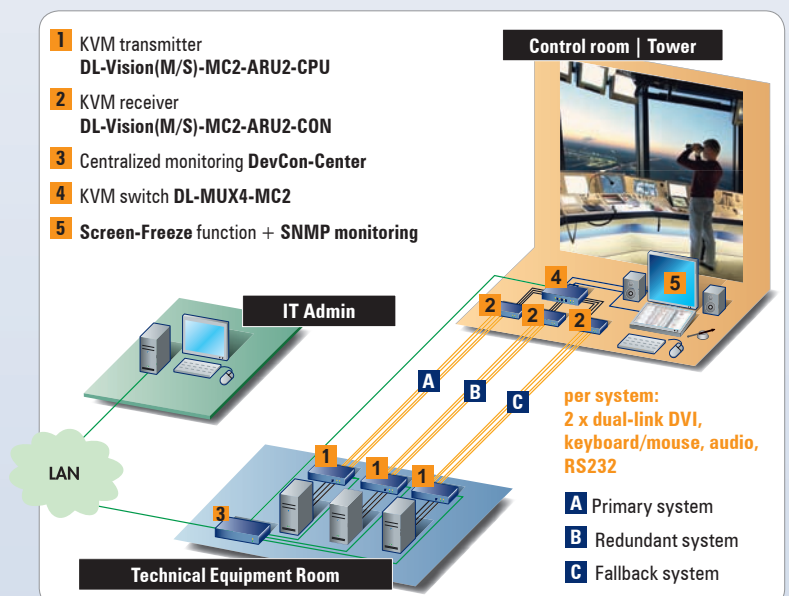
Customer benefits using KVM - Full safety thanks to redundancy and fallback

The unlikely event of a system breakdown despite preventive monitoring requires a concept that allows controllers to continue their work safely and intuitively in their familiar environment.

This requires a redundant system that is safeguarded by another fallback system. Now two functional lines are still available even if the primary connection fails.

Three independent but identical systems per controller desk serve for a primary, a redundant and a fallback system. Each of these three systems consists of a computer and a KVM extender line. The controller only needs to switch between the three systems by simply pressing a button on the KVM switch, e.g. DL-MUX4.

Screen freeze function "freezes" the image last displayed on the monitor. Users are provided with the information last received before switching to a redundant system.



KVM products for Air Traffic Control

Baggage Handling ► Increasing efficiency and remote access to all connected computers



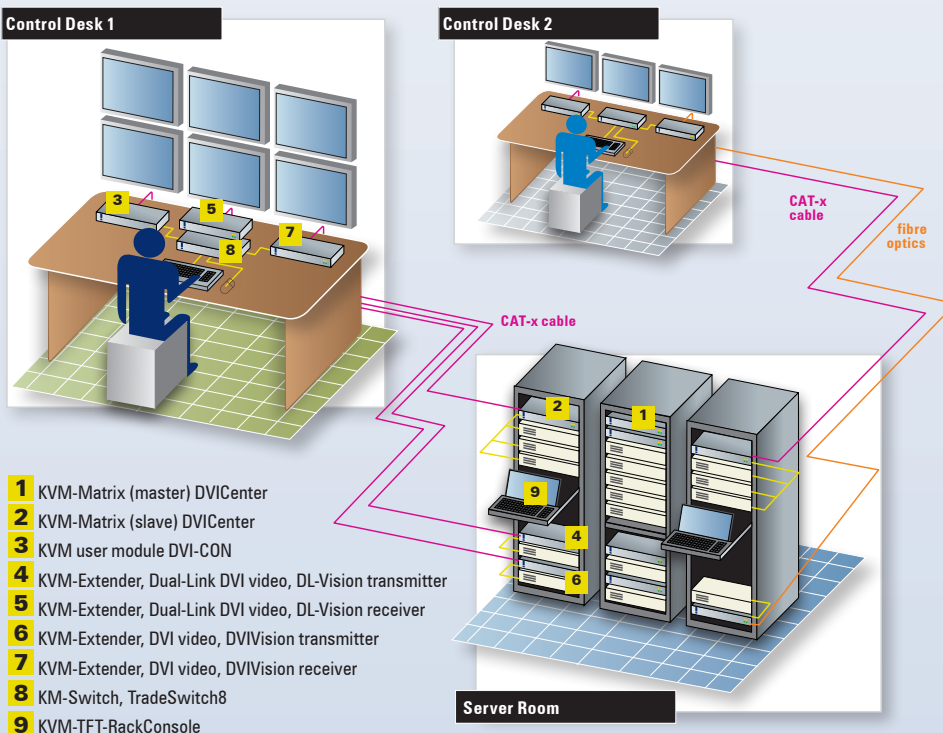
Screening, unloading, sorting, storing, transporting, uploading – a baggage handling system runs in a continuous cycle. That's why efficiency and reliability are so crucial.

The baggage handling control room continuously monitors and controls all the processes involved in the task cycle. Inside this room, operators are working with multiple computers, 24 hours a day, 7 days a week. As a result, the environment can become a very hot and noisy place. However, by implementing a KVM matrix switch such as the DVIcenter DB64, the computers can be removed from the room and the operators access multiple computers from different user consoles.

The matrix switch and the computer modules are placed in the server rack from where infrastructure cables bridge the distance to the controller's desk. Here, keyboard, monitor and mouse are directly connected to the user modules (DVI-CON). Additional special computer modules enable the implementation of VGA and DisplayPort computers into the matrix switch.



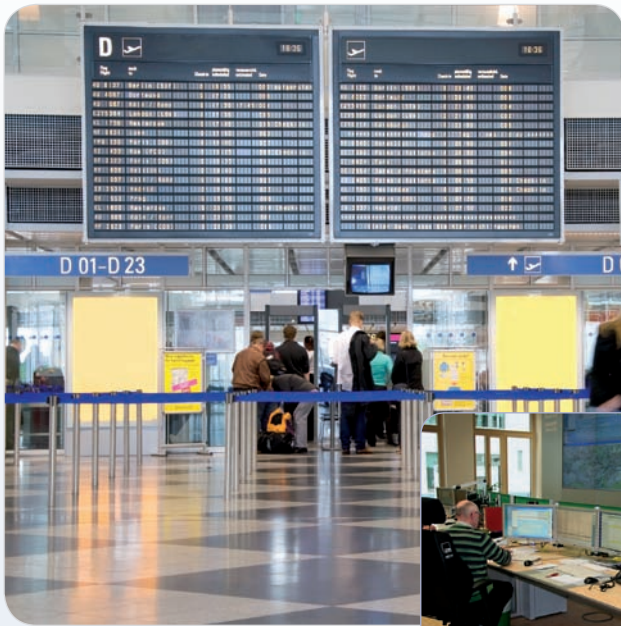
How KVM improves Baggage Handling?



In the baggage handling section all computers were removed from the control centre and stored into a separate equipment room. Here, they were placed in clearly arranged server racks and connected to a KVM matrix switch DVIcenter. Now several users are able to access a large variety of computers remotely. After the matrix switches had been grouped, they were connected to a master switch, which enables users to configure and operate all connected devices. Some computers, however, could not be connected to the matrix switch, because they were assigned to particular employees. In such cases, KVM extender systems extend computer signals directly to the corresponding desks.

By applying G&D's KVM products, computers can be maintained directly in the equipment room, thus helping employees remain focused on their work instead of being distracted by maintenance workers

General Control Centres at Airports ► Reducing noise level and heat emissions



Supervising important processes on the ground and in the air, General Control Centres ensure the prompt departure of all airplanes. To maintain and manage these complex traffic processes requires multiple employees working with powerful computers combined with multi-monitor user consoles as well as multi-screen-walls.

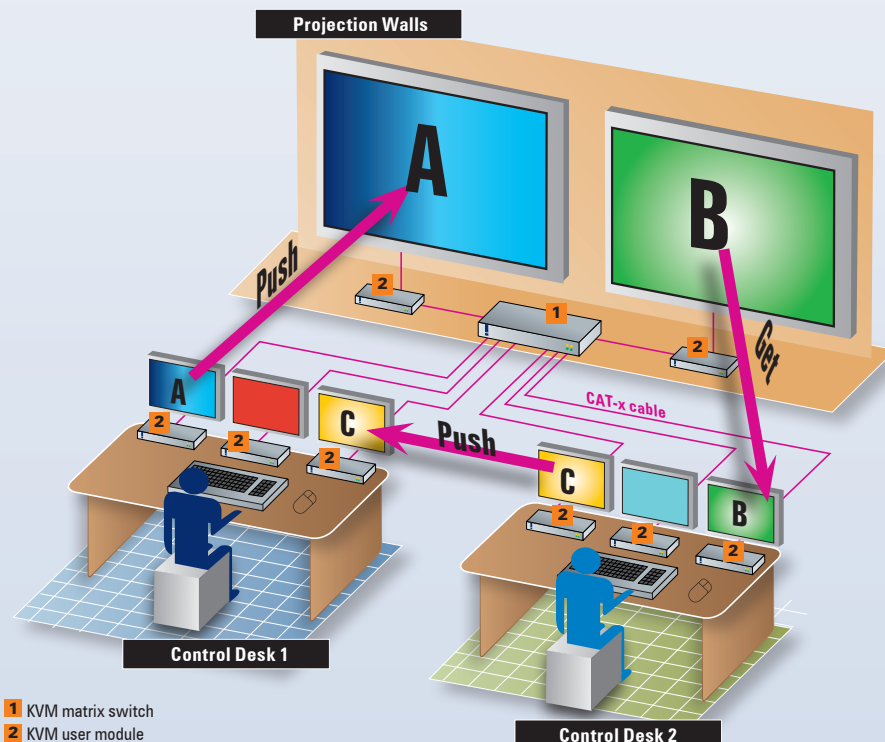
In order to make the working conditions for the staff most efficiently, all the computers are removed from the control room and connected to a KVM matrix switch in a separate technical area. Without the associated heat and noise, operators can continuously access their computer and switch between different computers – in real time and without any latency.

With the intuitive CrossDisplay-Switching users can switch seamlessly between computers by using the mouse. The mouse acts as if it's on a "virtual desktop" moving across all connected displays.

Discover the new
CrossDisplay-Switching!



How KVM works in General Control Centres at Airports?



To make working in mission-critical environments more efficient and ergonomic, computers are separated from users and stored in central server rooms, where they are air-conditioned, safe and easy to maintain.

With the installed KVM products, users can still operate their computers in real time. A KVM matrix switch enables the access to multiple computers that users can operate from different desks.

The **Push/Get feature** of the matrix switch even lets users push the screen content from one monitor to another or to a video screen. It is also possible to get the screen content from there to edit it at another monitor. This solution does not only require fewer computers.

Now that employees can share their tasks, it also improves the communication, flexibility and general work-flow within the team.

Leading the way in digital KVM

The Products



KVM Extenders

DVI and VGA KVM extenders enable you to operate your computers over distances up to 10,000 m whilst maintaining real-time performance. The systems consist of a transmitter and a receiver module. A full local console at the transmitter module placed in the server room makes it easy for the IT staff to maintain the system. KVM extenders transmit the following computer signals:

- DVI (single-link & dual-link) or VGA video
- Keyboard/mouse (PS/2 & USB)
- USB 1.1, USB 2.0 transparent
- Audio & RS232
- Remote power switching sequences

Highlights:

- Distances up to 10,000 m
- Real-time performance
- Up to four video channels
- Predictive maintenance via SNMP und Monitoring



KVM Switches

DVI, VGA and DisplayPort KVM switches are designed to operate 2 to 64 computers via one console consisting of keyboard, monitor and mouse. Our DVI switches also transmit VGA video signals and enable users to work in mixed mode. The stand-alone devices switch the following computer signals:

- Single- and dual-link DVI, DisplayPort 1.1. and VGA
- Keyboard/mouse PS/2 and USB
- Transparent USB 2.0
- Audio

Highlights:

- Mixed operation of DVI/VGA on input and output side
- DisplayPort 1.1. also switchable
- Available as variants transmitting 1, 2, 3, or 4 video channels
- Work in a user-friendly and ergonomic environment and have less peripherals at your desk



KVM Matrix Switches

With KVM matrix switches you can access multiple computers over multiple user consoles simultaneously. They consist of computer modules, central modules and user modules. G&D products allow flexible operation of large, distributed IT installations even with multiple user consoles connected. Depending on the requirements, we offer KVM matrix switches with modular or compact design. Our KVM matrix switches transmit the following signals:

- Single-link DVI & VGA
- DisplayPort 1.1. (on the input side)
- Keyboard/mouse PS/2 and USB
- Audio
- RS232 and transparent USB 2.0

Highlights:

- Transmission range up to 10,000 m by fiber optics
- Available as variants transmitting multi-channel video
- Example DP64: Up to 4,738 computers when operated by 6 consoles
- Remote access (local and over IP)
- Flexible control of large and distributed IT installations
- Push-Get function to show screen contents on other monitors or large screen projections
- CrossDisplay-Switching enables users to switch between channels by moving the mouse



KVM Add-Ons

Add-on products increase the productivity and efficiency of computer applications. G&D provides the following add-on products:

- TFT RackConsoles for single-link DVI and VGA; 17" display requires only 1 U
- Programmable input devices for optimised device control
- 3G-SDI-DVI-Converter transforms SD, HD-SDI and 3G signals to single-link DVI signals
- Rack mounting solutions for horizontal or vertical rack or under-desk mounting enable tidy and space saving installations
- Appliances for central, proactive monitoring and central configuration for network-capable G&D devices
- External devices for switching a G&D switch by pressing a button (OperatorPanel)

KVM products for Air Traffic Control

KVM Extenders for CAT cables or fibre optics

DL-Vision

Digital dual link video via fibre optics

- ▶ Range up to 10,000 m, with USB option up to 2,000 m
- ▶ Resolutions up to 2560 x 1600 @ 60 Hz including 2k-resolution (2048 x 2048 @ 60 Hz)
- ▶ DL-Vision-MC2 also supports 4k-resolution
- ▶ For up to **4 video channels**
- ▶ Comprehensive proactive diagnostics by SNMP Monitoring
- ▶ 300 MHz pixel rate and 24 bits colour depth for crystal clear images
- ▶ Redundant power supply
- ▶ 2 network ports
- ▶ Screen freeze function with timer
- ▶ E-DDC support
- ▶ Ident-LED for locating device in large installations

The DL-Vision (M/S) system extends the signals:

- ▶ Keyboard/mouse
- ▶ Dual-link DVI video
- ▶ Audio
- ▶ RS232
- ▶ USB 2.0



FIBREVision

Digital single link video via fibre optics

- ▶ Range up to 10,000 m, with USB option up to 2,000 m
- ▶ Resolutions up to 1920 x 1200 @ 60 Hz
- ▶ For up to 4 video channels
- ▶ E-DDC support
- ▶ Remote power switching
- ▶ Redundant power supply
- ▶ Screen freeze function

The FIBREVision system extends the signals:

- ▶ Keyboard/mouse
- ▶ Single-link DVI video
- ▶ Audio
- ▶ RS232
- ▶ USB 1.1 & USB 2.0



DVIVision

Digital single link video via CAT cable

- ▶ Transmissions up to 140 meters
- ▶ Resolutions up to 1920 x 1200 @ 60 Hz
- ▶ For up to 4 video channels
- ▶ E-DDC support
- ▶ Supports DVI-FiberLink (for bridging horizontal fiber optics cabling)
- ▶ Remote power switching
- ▶ Redundant power supply
- ▶ Screen freeze function

The DVIVision system extends the signals:

- ▶ Keyboard/mouse
- ▶ Single-link DVI video
- ▶ Audio
- ▶ RS232
- ▶ USB 1.1 or USB 2.0



KVM Switches to operate multiple computers via one console

The DL-MUX switches the following signals:

- ▶ Keyboard/mouse
- ▶ Dual-link DVI & VGA video
- ▶ Audio
- ▶ USB 2.0

Operator Panel:

- ▶ Switching by pressing a button
- ▶ Simplifies the operation of KVM Switches
- ▶ Switching up to 8 channels by RS232 command with active response
- ▶ „Enable“ key prevents accidental switching



DL-MUX4

For up to 4 computers via one console

- ▶ Resolutions DVI up to 2560 x 1600 @ 60 Hz
VGA up to 1920 x 1440 @ 75 Hz
including 2k resolution (2048 x 2048 @ 60 Hz)
- ▶ For up to 4 video channels
- ▶ 2 network ports
- ▶ Including SNMP Monitoring and reporting function
- ▶ Channel switching via hotkey, SNMP, buttons, external serial device or Control-API
- ▶ Web interface to configure and display monitoring values remotely
- ▶ Supports communication with the central appliance DevCon-Center for monitoring and configuration
- ▶ Ident-LED to locate devices in large installations

The TradeSwitch switches the following signals:

- ▶ Keyboard/mouse (USB & PS/2)
- ▶ Audio
- ▶ USB 2.0



TradeSwitch

For operating up to 8 computers over only one set of keyboard/mouse

- ▶ Accesses only standard keyboard, mouse and audio interfaces
- ▶ Bypasses video signals
- ▶ Channel switching via hotkey, device button or via **CrossDisplay-Switching**
- ▶ CrossDisplay-Switching function is available for the following switches: TradeSwitch2-USB & TradeSwitch4-USB
- ▶ Highlights active channel using LEDs

The DisplayPortMUX switches the following signals:

- ▶ Keyboard/mouse
- ▶ DisplayPort 1.1.
- ▶ Audio
- ▶ USB 2.0 transparent



DisplayPortMUX

For up to 4 computers with single video

- ▶ Mixed operation of DisplayPort and DVI on output side
- ▶ Colour mode DisplayPort up to 48bit
- ▶ Colour mode DVI up to 24 bit
- ▶ Data transfer rate up to 10.8 Gbit
- ▶ Switching via push button, keyboard hotkeys or serial device

KVM products for Air Traffic Control

Modular KVM Matrix Switches to operate multiple computers via multiple consoles

ControlCenter-Digital

Modular Matrix Switch to operate multiple computers via multiple consoles

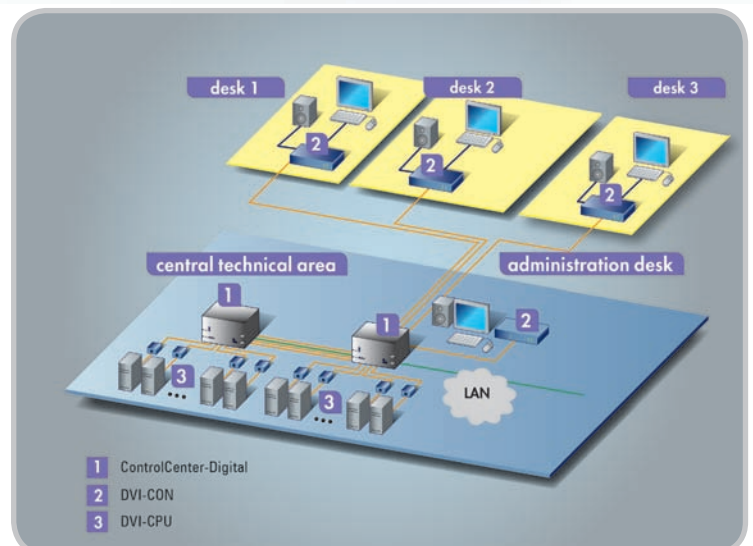
- ▶ Modular setup: Controller and switch card, I/O CAT- & I/O Fibre cards, fan boards and the power supplies are modular and can be replaced
- ▶ Modularity: the system can be adapted or expanded during operation
- ▶ Supports CAT cable and fiber optics (even combined)
- ▶ System control logic on a separate controller card and can be easily replaced / switch card can be replaced as well
- ▶ More flexibility with DynamicPort technology: 288 dynamic ports that can be freely configured for either user or computer connection
- ▶ Resolutions for a brilliant video quality: Single-Link DVI up to 1920 x 1200 @ 60 Hz (incl. 1920 x 1080 Full-HD)
- ▶ Integration of VGA & DisplayPort video sources
- ▶ Full implementation of USB2.0 transmission/switching
- ▶ Automatic device detection
- ▶ Multi monitor workstations incl. CrossDisplay-Switching
- ▶ Innovative CrossDisplay-Switching enables users to switch between channels by using the mouse
- ▶ Expansion of switchable signals either through channel grouping or stacking
- ▶ Cascadable to up to 3 levels
- ▶ DVICenter can be fully integrated into the system as a slave
- ▶ Compatible with all DVICenter devices
- ▶ Operation and configuration via web interface and OSD
- ▶ Monitoring & SNMP
- ▶ Two network interfaces (web interface, updates)
- ▶ Three redundant power packs that can be changed during operation
- ▶ Maximum flexibility (number of ports, transmission media, supported signals and high usability)
- ▶ Expansion stages for largest applications
- ▶ Text-based media control over TCP/IP e.g. AMX, Crestron, VSM and KSC Commander
- ▶ Operation via touchscreen possible



The ControlCenter-Digital switches the following signals:

- ▶ Keyboard/mouse (USB & PS/2)
- ▶ Single-Link DVI video
- ▶ Audio bidirectional
- ▶ USB 2.0 transparent
- ▶ RS232

NEW



Application scheme

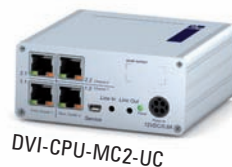
Compact KVM Matrix Switches to operate multiple computers via multiple consoles

The DVICenter system switches the following signals:

- ▶ Keyboard/mouse
- ▶ Single-link DVI video
- ▶ Audio bidirectional
- ▶ RS232 & USB 2.0 transparent



Use all common
video signals in one
matrix switch



The CATCenter NEO system switches the following signals:

- ▶ VGA video
- ▶ Keyboard/mouse
- ▶ Audio



DVICenter

Operating multiple computers via multiple simultaneous consoles

- ▶ Up to 560 m system range via CAT cable when cascaded
- ▶ 16, 32 or 64 dynamic ports, which can be freely configured for either user or computer connection
- ▶ Crystal clear images
- ▶ Resolution up to 1920 x 1200 @ 60 Hz and 1280 x 1024 @ 85 Hz
- ▶ Integration of VGA and DisplayPort video sources
- ▶ Operation and configuration via web interface and OSD
- ▶ Monitoring function, SNMP support
- ▶ Text-based media control over TCP/IP e.g. AMX, Crestron, VSM and KSC Commander
- ▶ Redundant power supply
- ▶ Up to 10,000 m using fibre optics (DVI-FibreLink)

DVICenter Components

Even more possibilities

- ▶ DVI-DP-CPU: Computer module for integration of DisplayPort into the DVICenter
- ▶ DVI-CPU-MC2: integrates multi-channel video computer into the matrix
- ▶ DVI-CPU-MC2-UC: dual module for connecting multi-channel computer to two DVICenter clusters
- ▶ DVI-CON-MC2 & DVI-CON-MC4: Multi-channel user modules for integration of multi-monitor consoles
- ▶ DVI-VGA-CPU integrates VGA video sources into the matrix switch

CATCenter NEO

Analogue video via CAT cable

- ▶ Transmissions up to 300 meters
- ▶ Resolutions up to 1920 x 1440 @ 75 Hz
- ▶ Operation and configuration via OSD, web interface and IP-client
- ▶ System range up to 10,000 m via fiber optics
- ▶ Offers module to access computers over IP
- ▶ Monitoring function, SNMP support
- ▶ Redundant power supply
- ▶ Integration of DVI computers possible

KVM products for Air Traffic Control

KVM Add-ons: Configuration & Status Monitoring

Preventive device monitoring

High operational safety and reliability are essential for G&D devices. In order to enhance these well-established attributes, our latest products are provided with two network ports which offer the following possibilities:

- ▶ Device configuration
- ▶ Query of system status
- ▶ Transmit these information via SNMP and as Syslog message

You can adjust these settings either in the web interface of each device or monitor and configure the devices centrally in the DevCon-Center. The DevCon-Center permanently contacts the connected devices and receives their status information.

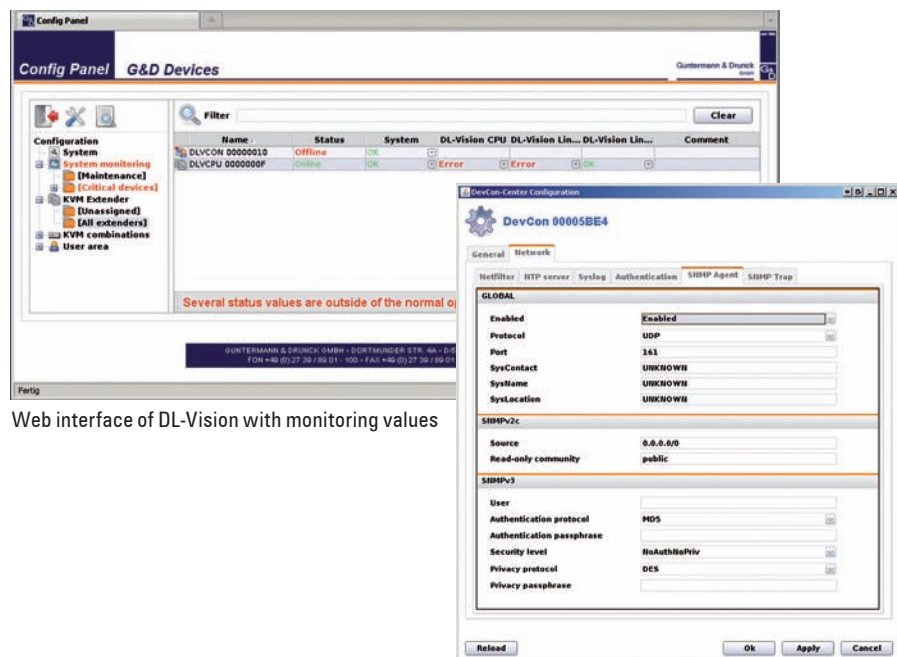
DevCon-Center

- ▶ Monitoring, reporting and requesting
- ▶ Compatible with G&D network devices
- ▶ Independent reporting or query of web interface
- ▶ Supports SNMP (Trap + Agent) and Syslog
- ▶ Redundant power supply
- ▶ Two network ports
- ▶ Critical operating conditions can be recognised in advance and the administrator can react accordingly
- ▶ Runs with every SNMP Management Software e.g. HP OpenView, Tivoli etc.

SNMP trap & agent

Monitoring function for the predictive maintenance

- ▶ Defined conditions and exceeded thresholds are stored in the web interface and can be viewed anytime
- ▶ SNMP management software receives automatically any status event sent by G&D devices
- ▶ Integrated SNMP-GET function enables you to query, for example, the device temperature and to provide statistics on top values as well as to recognise critical values in advance
- ▶ SNMP-SET has active impact on a G&D product (for example when changing channels at a KVM Switch)



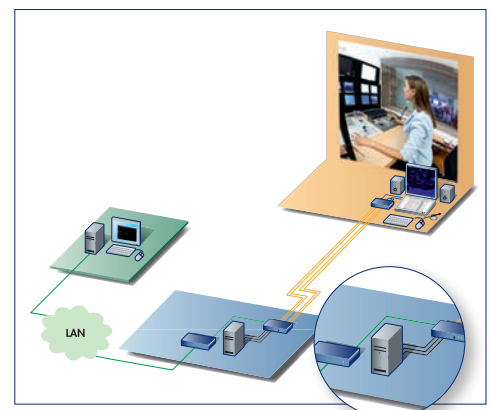
Web interface of DL-Vision with monitoring values

Network settings for the SNMP agent



Following products provide the monitoring function:

DL-Vision
DL-MUX4
ControlCenter-Digital
DVICenter
CATCenter NEO
CompactCenter X2



KVM Add-ons: Variety and Functionality

Your special advantages:

- Easy switching by using the mouse, in addition to switching between channels using hotkeys or the OSD
- Fast and seamless operation across the connected displays
- Special LED indicates active monitor



Channel grouping and multi-monitor workstations

The ControlCenter-Digital and the DVICenter also support multi-monitor workstations for computers with several video outputs. Here, multiple channels can easily be combined as **channel groups**.

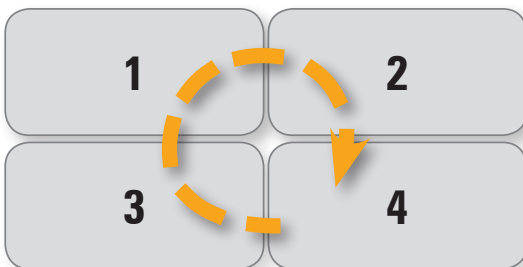


Illustration of the channel-grouping function for multi-monitor workstations.



FIBREVison-CON and WACOM® display with active SCREEN FREEZE

CrossDisplay-Switching

With the innovative CrossDisplay-Switching as part of the TS function (DVICenter and ControlCenter-Digital), users can use the mouse to easily switch between channels.

The mouse acts as if on a “virtual desktop” and can be moved seamlessly across the connected displays. Moving the cursor from the active to another display, the keyboard-mouse focus automatically switches to the connected computer. Now users can create a multi-monitor console and need only one keyboard and one mouse to operate all computers. The mouse becomes the ultimate intuitive switching tool.

Channel grouping

As always, you can administrate all functions in the in the web interface of your ControlCenter-Digital or DVICenter. In addition to multiple screens, you can include other signals in these groups. The system also transmits and switches transparent USB2.0 signals as well as RS232.

Stacking function.

The stacking function enhances the system’s flexibility even further. The feature increases the number of ports by combining up to ten DVICenter or ControlCenter-Digital via bus port. The ports of the stacked switches are switched parallel to the master system. Now you can create multi-monitor workstations and assign consoles with USB or RS232 channels.

Screen-Freeze Function

If the display loses the video signal due to a broken connection or a problem with the computer’s graphics card, the Screen-Freeze function „freezes“ the image last displayed on the monitor. Controllers are provided with the information last received before switching to a redundant system. KVM extenders of the DL-Vision, FIBREVison and DVIVision series provide the screen-freeze function.

In case of an interruption of the video signal it is essential that the controller’s screen does not turn blank, but displays the last frame until all interferences are solved. This status is highlighted by a red semi-transparent frame. Meanwhile, the downtime of the video signal is displayed (DL-Vision).

Leading the way in digital KVM

From professionals to professionals:

Trust in our professional solutions - from planning through to aftersales support.



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